

**SHALLOW SOIL EXCAVATION CLOSURE,
PLANTER AREA, PARCEL A
FORMER C-6 FACILITY
LOS ANGELES, CALIFORNIA**

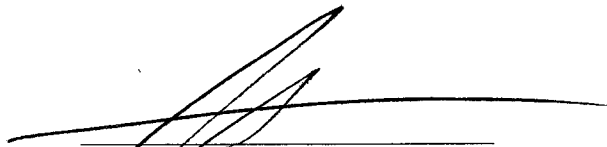
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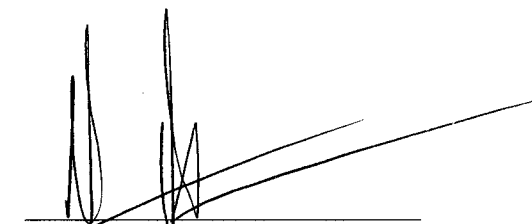
8 March 2004

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1. INTRODUCTION AND PURPOSE

Boeing Realty Corporation (BRC) has completed the remediation of shallow soils (surface to 12 feet below ground surface [bgs]) impacted with arsenic within the planter area of Parcel A (Site) as shown in Figure 1 & 2. Elevated arsenic concentrations in shallow soil on Parcel A were detected during shallow soil remediation being performed on the adjacent Parcel C. This remediation was performed in accordance with the Regional Water Quality Control Board, Los Angeles Region (LARWQCB) – approved Work plan to Perform Shallow Soil Remediation Excavation Activities – Parcel A, Former C-6 Facility, Los Angeles, California (work plan) (Haley & Aldrich, Inc., 2003). This report summarizes the remediation efforts which include:

- Survey of the planter area and location of previous samples as described in the work plan;
- Clearing and grubbing of the planter area;
- Removal of shallow soil with arsenic impacts greater than 14 milligrams per kilogram (mg/kg);
- Sampling to confirm that arsenic impacts above 14 mg/kg were removed; and
- Backfill of the excavation with non-impacted soil.

This remediation excavation was performed to maintain the conditions of the existing LARWQCB shallow soil closure for the Site.

2. BACKGROUND

This shallow soil remediation excavation was performed to remove arsenic-impacted soil above 14 mg/kg along the western boundary of Parcel A at BRC's Former C-6 Facility, located at 19503 South Normandie Avenue in Los Angeles, California. Parcel A is one of four parcels (Parcels A through D) at the former C-6 facility, as shown on Figure 2.

BRC acquired the Site in 1997. From 1997 to 1998, BRC performed Site assessment, remediation, and human health risk assessment activities. The California Department of Toxic Substances Control (DTSC), Human and Ecological Risk Division (HERD) reviewed and approved the human health risk assessment. Based on this approval, the LARWQCB granted a No Further Action determination on 21 April 1998 for shallow soil in Parcel A. In 1999, Parcel A was sold and redeveloped. Redeveloped land use includes a hotel, retail shops, and a former car dealership.

The following sections of this closure report present the Site description and history, geologic and hydrogeologic setting, and a summary of the previous shallow soil investigation and remediation activities.

2.1 Site Description and History

Parcel A occupies approximately 50 acres in the northern portion of the Site (Figure 2). It is bordered by 190th Street to the north, railroad tracks and South Normandie Avenue to the east, Parcel C to the south and southwest, and Harborside Way, Parcel B and International Light Metals to the west. Aerial photographs indicate the area was farmland before the 1940s. Industrial use of Parcel A began in 1941, when it was developed as part of an aluminum reduction plant. In 1948, the aluminum reduction plant was converted to a steel manufacturing facility. In 1952, the Douglas Aircraft Company (DAC) used the Site to manufacture aircraft and aircraft components until approximately 1992. Prior to redevelopment, Parcel A contained Buildings 34, 36, 37, 61, 44, 45, 57, 67, and the northern portions of Buildings 29 and 58. From 1992 to 1997, DAC used the buildings primarily for office space and storage.

2.2 Geologic Setting

The Site is located on the Torrance Plain physiographic area of the West Coast Basin. Groundwater monitoring wells and soil borings drilled at the Site have encountered the Lakewood Formation, which consists of two major Hydrostratigraphic Units; the Bellflower Aquitard and the Gage Aquifer. Groundwater monitoring wells at the Site have only been installed within the Bellflower Aquitard, which extends to a depth of approximately 140 feet bgs. The Bellflower Aquitard below the Site consists of fine-grained soils (predominantly interbedded fine sands, silts, and clays) (Haley & Aldrich, 2002a).

2.3 Hydrogeologic Setting

Groundwater at the Site is located in sediments of the Bellflower Aquitard (Haley & Aldrich, 2002a). The uppermost groundwater occurs under water table conditions at depths of approximately 60 to 70 feet bgs. Most of the former C-6 facility groundwater monitoring wells are screened near the water table at depths ranging from 55 to 90 feet bgs. No groundwater monitoring wells currently exist in Parcel A, as a result of the current redevelopment activities. Groundwater flow on the former C-6 facility is predominately to the south, under a gradient of approximately 0.001 feet/foot (Haley & Aldrich, 2002a).

2.4 Previous Soil Investigation and Remediation

Demolition activities on Parcel A took place in 1997 and 1998. Soils at the Site were extensively characterized between 1997 and 1998. Soils with concentrations above the Site remediation goals were remediated and confirmation soil samples were collected and analyzed in accordance with the LARWQCB-approved Sampling and Analysis Plan for Demolition Activities, prepared by Integrated Environmental Services, Inc. (Integrated, 1997a). Remediation excavation activities were performed on Parcel A in 1997 and 1998. Approximately 47,800 cubic yards of shallow soil impacted with volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), total recoverable petroleum hydrocarbons (TRPH), poly-chlorinated biphenyls (PCBs), and/or metals exceeding the target health-based remediation goals (HBRGs), developed by Integrated (Integrated, 1997b), were excavated.

Following remediation excavations, a risk assessment was performed to verify that Parcel A met health-based criteria (Integrated, 1998). The DTSC-HERD reviewed and approved the post-demolition human health risk assessment. Based on the work completed and the DTSC-HERD human health risk assessment approval, the LARWQCB issued a closure and No Further Action Letter on 21 April 1998 for shallow soils in Parcel A (LARWQCB, 1998).

During soil remediation activities on the adjacent Parcel C in 2001, arsenic concentrations exceeding the HBRG of 14 mg/kg were detected along the boundary of Parcels A and C (Figure 3). A supplemental soil investigation was performed on Parcel A (Haley & Aldrich, Inc., 2002b) to evaluate the extent of arsenic impacts detected at the east edge of Parcel C. In August and September 2001, a total of 58 soil samples were collected from 29 soil borings on Parcel A to define the extent of arsenic impacts above 14 mg/kg. The samples were analyzed for arsenic by EPA Method 6010B, and the laboratory reported that arsenic was detected at concentrations ranging from 2.4 to 816 mg/kg (Figure 3).

Soil sampling activities were constrained to a narrow strip of Parcel A between a sewer and utility corridor to the east, and the Parcel A and C boundary to the west. This narrow strip of Parcel A was not excavated or re-graded during the installation of the sewer main in 1998. Remediation of arsenic-impacted soil in this area is described in the following sections.

3. EXCAVATION, CONFIRMATION SOIL SAMPLING, ANALYSIS AND RESULTS

A detailed description of the remediation plan for the Site is presented in the work plan (Haley & Aldrich, 2003). Work was performed on-Site between 15 January and 30 January 2004. A summary of the remediation activities and confirmation sampling results for the planter area in Parcel A is presented below.

3.1 Parcel A - Planter Area Excavation

The work plan called for the excavation of shallow soil impacted with arsenic from the planter area. The original limits of excavation discussed in the work plan are shown along with the historical sample results in Figure 3. Based on the in-place arsenic concentrations, the soil was classified as non-hazardous for waste disposal purposes by a Boeing waste management specialist. However, one area in the planter (approximately 20 ft by 10 ft) contained elevated concentrations of arsenic and required disposal as a hazardous waste (Figure 3). This area was excavated first and stored in a bin on-Site for transport off-Site as hazardous waste.

The remaining in-place soil was excavated, direct-loaded and transported off-Site under non-hazardous waste manifests on 19, 20, 21, 27 and 28 January 2004. Only excavation and stockpiling occurred on 27 January 2004. Confirmation soil samples were collected in the excavation by Haley & Aldrich and analyzed by Severn Trent Laboratories (STL).

Excavation work was performed by Innovative Construction Solutions under a one-year Various Locations Rule 1166 Contaminated Soil Mitigation Plan (Plan No. 420450) issued by the South Coast Air Quality Management District (SCAQMD) on 10 October 2003. Notification Form reference number 65882 was received from the SCAQMD on 13 January 2004. Per the requirements of Rule 1166 and the SCAQMD, air monitoring for VOC's using a photo ionization detector (PID) was performed during all excavation activities. No detections of VOC's were observed.

Confirmation soil samples were collected with a hand auger to sampling depths at the limits of the original excavation. Soil samples were collected from the hand auger bucket and placed in glass jars with Teflon-lined lids. The jars were labeled and placed on ice in a cooler for shipment to the analytical laboratory under chain of custody protocol.

In accordance with the work plan, one sample was collected for every 200 square feet (ft²) of sidewall and one sample was collected for every 400 ft² of excavation floor. Sidewall samples were collected at a depth of approximately 2.5 ft bgs. Floor samples were collected from the base of the excavation at a depth of approximately 5 ft bgs. Upon completion of the planned excavation limits, a total of 38 confirmation soil samples were collected. Of these samples, six sidewall samples and one floor sample (CSA_015, CSA_017, CSA_019, CSA_026, CSA_033, CSA_036, CSA_044) exceeded the Site remediation goal of 14 mg/kg total arsenic. Nine additional confirmation soil samples were collected and analyzed for arsenic.

Two of these nine additional step-out confirmation soil samples (CSA_046 and CSA_047) had results that exceeded the Site remediation goal. An additional step-out excavation was performed and two additional confirmation soil samples collected were analyzed (CSA_49 and CSA_050). These final two confirmation soil samples had arsenic results less than 14 mg/kg and the excavation efforts were considered complete based on the scope of work presented in the work plan. Step-out excavations were performed on 27 and 28 January 2004. A total of approximately 1,800 cubic yards of soil was excavated from the planter area. The final limits of the excavation are shown in Figure 4.

3.2 Confirmation Soil Sampling Analysis and Results

Forty seven (47) confirmation soil samples were analyzed by EPA Method 6010B for total arsenic. Based on the results of the laboratory analyses of soil confirmation samples, the final limits of the excavation had arsenic concentrations ranging from 2.6 mg/kg to 13.2 mg/kg. The results of the analysis are presented in Table I and on Figure 4. Laboratory data are included in Appendix B. The data validation report is included in Appendix C.

3.3 Excavation Backfilling and Compaction Activities

Upon completion of remedial soil excavation and confirmation sampling, the excavation was backfilled with clean import fill. The import soil source site was screened for industrial use. No industrial use was evident, so a representative soil sample was collected (as a grab sample) and analyzed for organic and inorganic chemicals. Prior to acceptance of import fill several criteria had to be met:

- All metals concentrations had to be below the Parcel A background concentrations; and
- All TPH, VOC, PCB, pesticides and polynuclear aromatic hydrocarbon (PAH) concentrations had to be non-detect.

Based on the results of the laboratory analyses of the import soil sample, import soils from the identified source were accepted as backfill for the Parcel A excavation. Appendix D discusses the import soil sample collection and evaluation in more detail.

Import soil was placed in the excavation to the original grade of the Site prior to excavation. Compaction to a minimum of 90 percent of the maximum dry density was performed according to the work plan.

3.4 Waste Disposition

Excavated hazardous soil and decontamination rinse water were collected and stored in a roll-off bin and 55-gallon drum respectively and profiled for disposal off-Site. Non-hazardous soil was direct loaded for off-Site disposal. Manifests are currently being received from the waste

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disposal facilities. Copies of the manifests will be sent under a separate transmittal to the LARWQCB when all copies are received.

4. CONCLUSIONS

The planter area of Parcel A has undergone remediation of shallow soil in accordance with the work plan. Shallow soil excavation was conducted and arsenic impacts in excess of 14 mg/kg have been remediated as directed by DTSC-HERD. The Site closure should remain in place based on the following information and conclusions:

- Approximately 1,800 cubic yards of soil were removed from the shallow soil excavation of the planter area of Parcel A;
- Confirmation sampling indicates that residual concentrations of arsenic remaining in shallow soil are below the Site remediation goal for arsenic of 14 mg/kg; and
- The excavation was backfilled with soils meeting the import soil criteria for the Site.

Based on the results of the remediation and confirmation sampling activities, shallow soil in the planter area of Parcel A meets the criteria of the original 1998 DTSC-HERD and LARWQCB closure, and can remain closed with no further action required.

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